

ORGANIC PHOTOVOLTAICS: FROM MOLECULAR DESIGN TO INDUSTRIAL SCALE FABRICATION

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- 1:30 OVERVIEW FOR NEED OF SOLAR
- 02:47 POWER COST 7.24¢ 14.37¢ IN CA 24¢ IN HAWAII
- 03:30 LARRY KAZEMZSKI PV PROGRESS SLIDE
- 04:00 BEST DEVICES @ 40% FROM BOEING
- 06:00 COST SOLARBUEZ.COM \$1/WATT IS GOAL
- 08:10 ORGANIC CELL BASICS
- 09:00 RASIDZ EFFICIENCY
INTER MOLECULAR ^{EFFECTIVE} BANDGAP SETS THE VOLTAGE SOURCE
- 11:45 DIFFERENCES BETWEEN CONVENTIONAL & ORGANIC
- 13:00 EXCITON FLOW IS A BOTTLENECK
- 13:50 BAND OFFSET
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- 17:00 ROLE OF EXCITON BINDING ENERGY
- 18:00 DONOR/ACCEPTOR
- 20:00 AN ARGUMENT FOR A LARGE OFFSET
1 eV DUMPED INTO $1 \text{ nm}^3 \approx 11,000 \text{ K}$
- 21:30 STUDY OF BAND OFFSET
- 23:00 DEVICE PROPERTIES
- 24:30 BAND GAP OF MATERIAL
- 26:20 DRIVE TO A LOWER BANDGAP TO 1.2 eV FOR
SOLAR CURVE IR PEAK
- 27:30 FACTORS AFFECTING THE OPTICAL BANDGAP
- 29:00 COMPUTATIONAL MODEL OF OPTICAL ABSORPTION
THE ADDITION OF π CONJUGATIONS PH-THZ-TTP, - THIOPHENE
PUSH ABSORPTION PEAK LOWER INTO THE IR (900 nm)
ISOTHIANAPHTHENE COPOLYMERS

- 3300 RESULTS OF DEVICE VARIATIONS
- 3400 LOW BAND PTPTB "PUSH PULL" POLYMERS
- 3440 NEW MATERIAL PCPDTBT 1.4eV $\approx 1.3\%$
EFFICIENCY BOOSTED TO $\approx 5\%$
- 3680 CARRIER RECOMBINATION OF 1-2 μs
- 3750 MEASUREMENT OF RECOMB.
- 3850 DEVICE MORPHOLOGY OPTIMAL DOMAIN SIZE TO RECOMBINATION
- 4000 " " \uparrow ^{PROCESS} CONSTRUCTION VARIABLES
- 4248 " " CASE STUDY THIOPHENE DENDRIMERS
- 4580 RECOMB IS TOO HIGH
- 4530 ROLE OF MORPHOLOGY
- 4550 DARK CURRENT POISONING DOPING MAY BE NEEDED

JAS. ENR. BUFFALO, EDU /

- 4750 INDUSTRIAL PERSPECTIVE
- SPIN COATING - SPRAY COATING 2.5%
- 4950 DEGRADATION [WIKISPACES.COM/OPVLIFETIME](http://wikispaces.com/OPVLIFETIME)
- 5054 CLOSING

